APMC

HOT ideas

Equivalence

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Hot Ideas for this edition provided by Janette Bobis, University of Sydney.

The main purpose of each activity in this issue is to develop an understanding of equivalence. Equivalent fractions have the same value, but may be expressed with a different denominator (e.g., $\frac{4}{8} = \frac{1}{2}$) or in a different notation (e.g., a fraction and a percentage or decimal fraction).

The first "Hot Idea" is *Decimal fraction dominoes**. It focusses on the equivalence of commonly occurring fractions, decimal fractions, percentages and their pictorial representation. Copy the page onto different coloured cardboard or paper to help distinguish different sets of the game. This helps if individual cards get separated from their original pack when being played in the classroom. Cut the individual cards and laminate for durability if desired. Play the game like traditional dominoes or ask your students to invent their own game.

Fraction toss and *Equivaliser* are board games that can be played at various levels. Younger children can play them with little understanding of equivalent fractions, but the games can also be used to develop a more sophisticated understanding of the concept as children learn to split, say $\frac{8}{12}$ into $\frac{1}{2}$ and $\frac{1}{6}$ to help them win the games.

* Green, K., Aldridge, S., Badham, V., Way, J.. McAndrew, D. & Harrison, I. (1993). *Jacaranda Maths Stage 6.* Jacaranda Press: Milton. Used with permission.

Decimal fraction dominoes

WILD WILD	$\frac{2}{10}$ 25%	$\frac{10}{100}$ 50%	$\frac{20}{100}$ 20%	10%
$\frac{5}{10}$ $33\frac{1}{3}\%$	0.1 10%	$\frac{50}{100}$ 	0.33 	 $\frac{3}{4}$
0.2 	0.5 	0.25 	$\frac{1}{10}$ 20%	$\frac{1}{2}$ 0.75
$\frac{1}{3}$ 	$\frac{1}{4}$ 50%	$\frac{1}{5}$ 	$\frac{1}{2}$ 0.25	0.5 75%

Fraction toss

No. players

2

Suitability

Grades 3–6

Materials

Fraction toss game board for each player (this, along with the fraction pieces, can be enlarged for student use)

fraction pieces (copy and cut up a full set for each player),

fraction die (or cards) showing $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{6}$, $\frac{1}{12}$ and two "free choice".

How to play

The winner is the first to make 4 "wholes" on the game board using the fraction pieces. Players take it in turns to toss the Fraction die. If "half" is tossed, the player takes a half or a combination of fraction pieces that equal "half"; e.g., the player may take 3 sixths or 6 twelfths. Fraction pieces can be moved from one whole strip to another. If a fraction is tossed but is not needed or does not fit the fraction space remaining, the player can miss a turn. A player can swap an existing fraction piece if a more appropriate fraction piece is tossed on the next toss of the die.

GAMEBOARD

FRACTION PIECES

$\frac{1}{2}$										$\frac{1}{2}$	
$\frac{1}{2}$										$\frac{1}{2}$	
$\frac{1}{2}$										$\frac{1}{2}$	
$\frac{1}{3}$					$\frac{1}{3}$				$\frac{1}{3}$		
$\frac{1}{3}$					$\frac{1}{3}$				$\frac{1}{3}$		
$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$	
$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$	
$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$
$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$

The equivaliser

No. players

2

Suitability

Grades 3–6

Materials

Equivaliser game board for each player,
4 counters for each player,
fraction die (or cards) with quarters, eighths and twelfths.

How to play

Players place 1 counter on the zero of each numberline. The winner is the first to get all 4 counters to the end of each numberline. Player A throws the die and moves a counter an equivalent number of spaces indicated by the fraction rolled: e.g., if $\frac{1}{4}$ is rolled, the player can move their counter on the quarters numberline $\frac{1}{4}$ OR they can move their counter on the eighths numberline $\frac{2}{8}$. Similarly, the counter on the twelfths numberline can be moved $\frac{3}{12}$. A player may "split" a fraction across numberlines e.g., if $\frac{2}{4}$ is rolled, the counter on the quarters line may be moved $\frac{1}{4}$ and the counters on either the eighths or twelfths lines could be moved the number of spaces equivalent to $\frac{1}{4}$ (either $\frac{2}{8}$ or $\frac{3}{12}$). Players take turns.